Figure 1

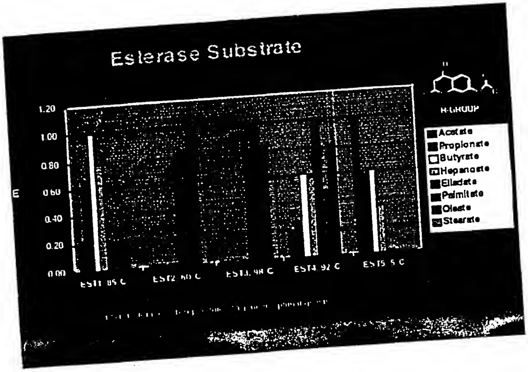
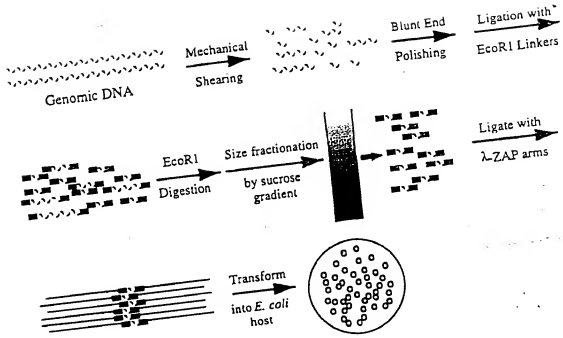

Esterase Substrate
1.20
1.00
0.80
0.60
0.40
0.20
0.00
EST1 85 C
EST2 60 C
EST4 92 C
R-GROUP
Acetate
Propionate
Butyrate
Hepanoate
Elladate
Palmitate
Oleate
Stearate

Figure 2.


Genomic DNA
Mechanical
Shearing
Blunt End
Polishing
Ligation with
EcoR1 Linkers
EcoR1
Digestion
Size fractionation
by sucrose
gradient
Ligate with
λ-ZAP arms
Transform
into E. coli
host

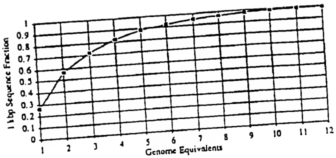


Figure 3.

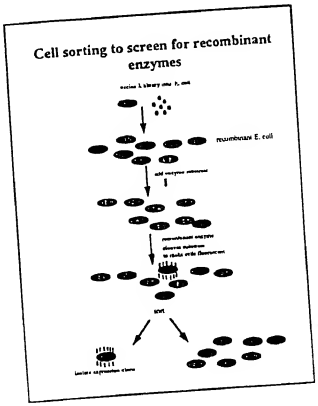

Cell sorting to screen for recombinant enzymes
recombinant E. coli
add enzyme substrate
sort

Figure 4.

β-Gal clone with different substrates

- cells were stained with FDG, CMFDG or C12FDG, incubated for 30 min. at 70°C, spotted onto a slide and exposed to UV light.
- bright spot indicates staining of cells

E. coli expressing β -Gal from Sulfulobus spec. was grown over night. Cells were centrifuged and substrate was loaded with deionised water. After 5 min. cells were centrifuged and transferred into HEPES buffer and heated to 70°C for 30 min.. Cells were spotted onto a slide and exposed to UV light.

Figure 5

Figure 6

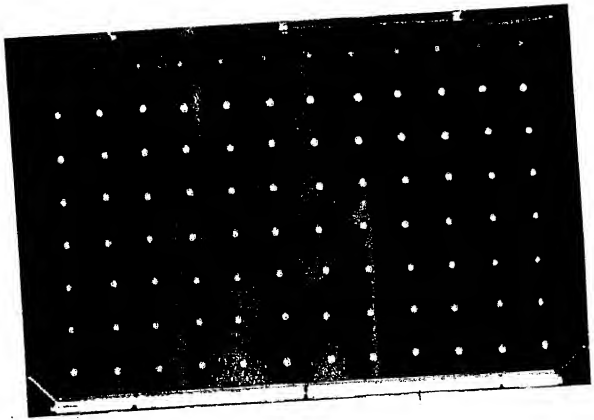
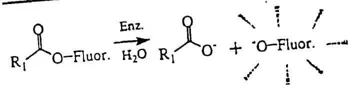


Figure 7

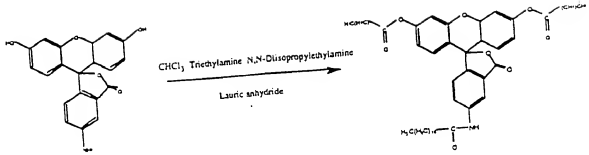


Principle type of fluorescence enzyme assay of deacylation.

Figure 8

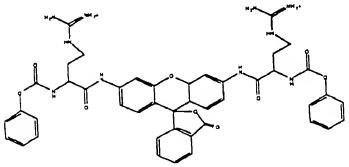
Staining of β-galactosidase clones from the hyperthermophilic archaeon *Sulfolobus solfataricus* expressed in *E.coli* using C_{12}-FDG as enzyme substrate.

Figure 9



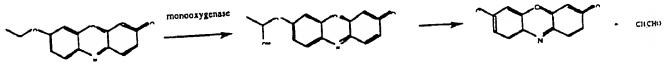
Synthesis of 5-dodecanoyl-aminofluorescein-di-dodecanoic acid

Figure 10



Rhodamine protease substrate.

Figure 11



Compound and process that can be used in the detection of monoxygenases

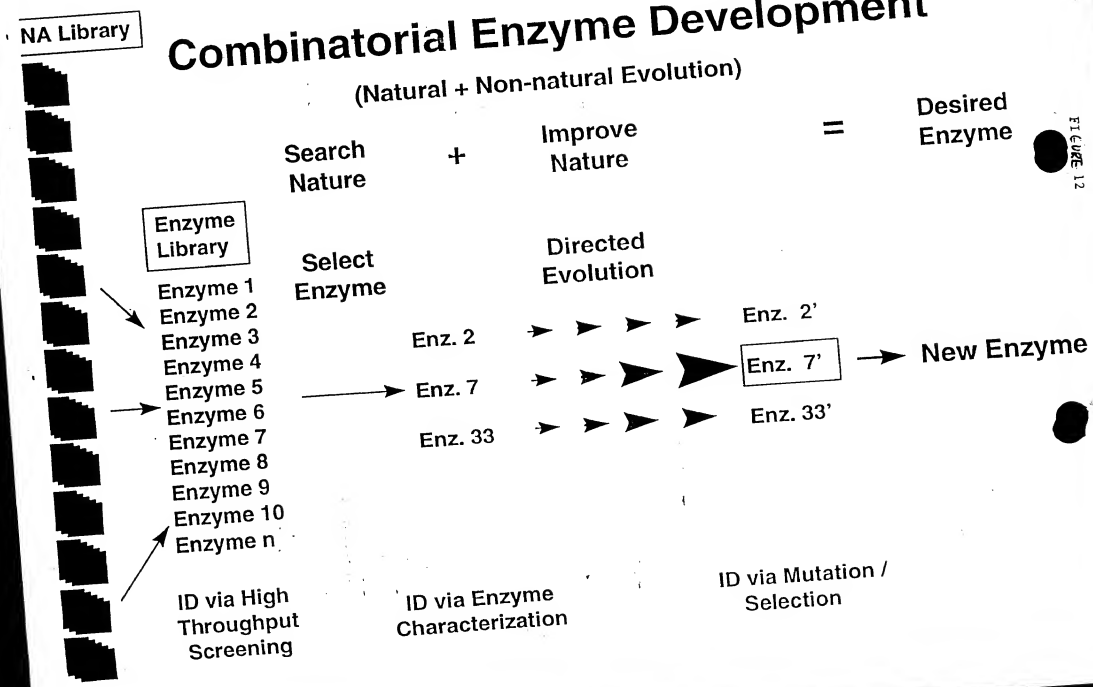


FIGURE 12

Bypassing Barriers to Directed Protein Evolution

(Barrier = Capacity limit of directed evolution system)

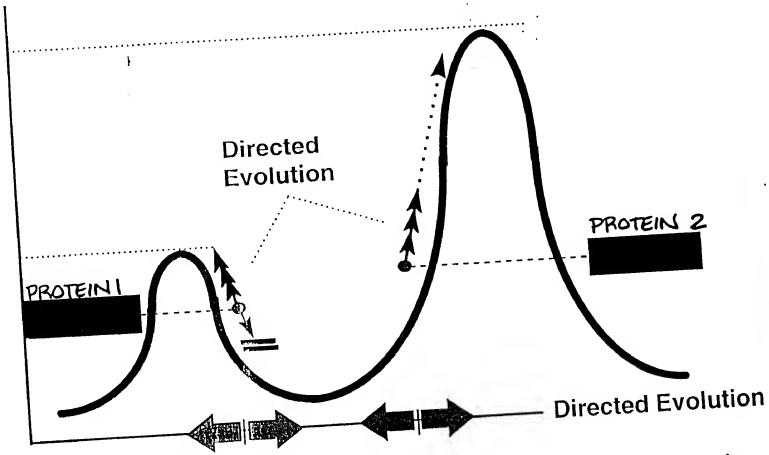
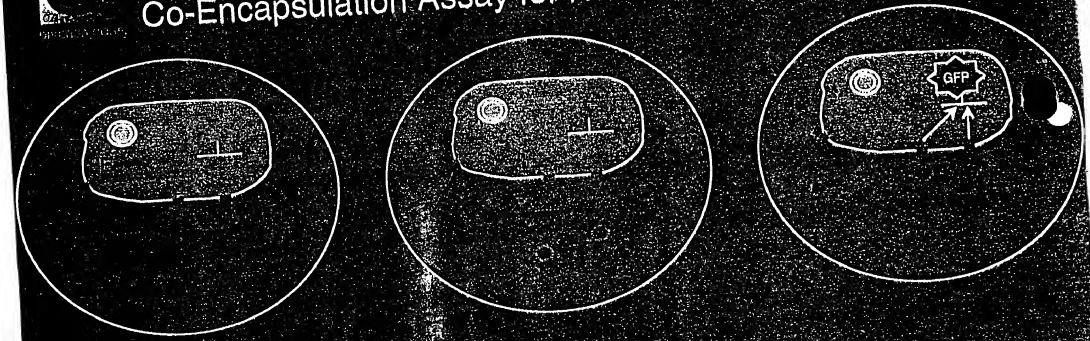


FIGURE 13

- T STABILITY
- olvent Stability
- Expression Level
- Buffer Compatibility
- Process Compatibility

RELATIVE ENZYME ACTIVITY

Co-Encapsulation Assay for Novel Bioactive Discovery



Co-encapsulation
Library + Eukaryote

Growth and expression
of small molecule from host

Receptor binding of small
molecule & GFP reporti

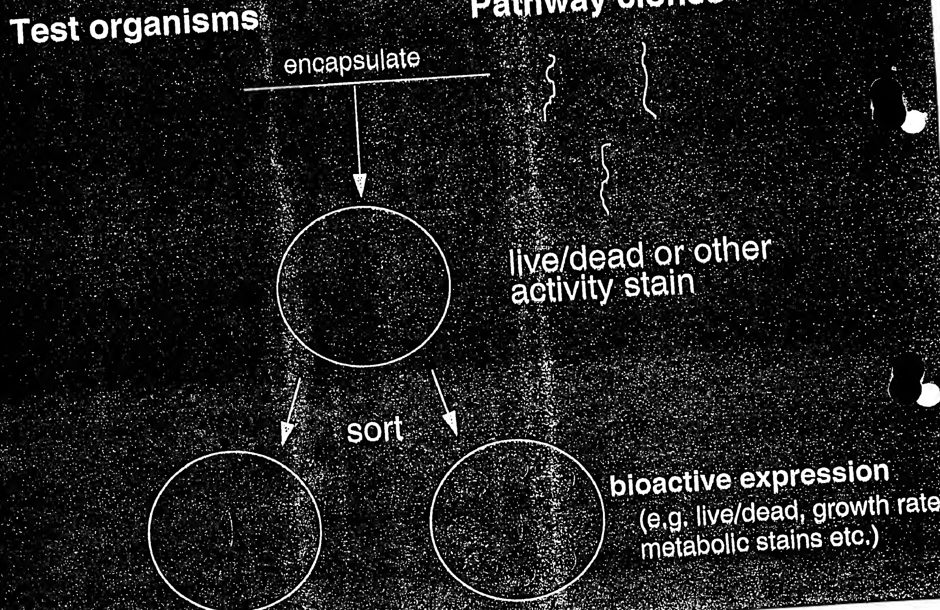
E= Eukaryotic assay organism
GFP = Green Fluorescent Protein

L = Large insert library
R = Eukaryotic receptor

SM = Small molecule

2.

FACS Screening for Encapsulation



Development of Unicellular *Streptomyces* Strains for Ultra-High Throughput Screening

Streptomyces lividans
mycelia

Streptomyces "diversa"
unicells

FACS Enrichment for Gel Microdroplets Containing *S. diversa*